

COCOA FERMENTER MODELS

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Abstract

In the southern region of Bahia, the cocoa culture has been a source of income and moved the economy for a long time, but the emergence of the witch's broom caused the decline of this productive sector. Given the importance of cocoa for the region, it makes sense to use it as an object of study for the development of academic research that can foster the reheating of this branch of the economy (SALES et al., 2022). In this context, for the processing of cocoa to occur to be able to use in the manufacture of chocolate and derivatives it needs to go through 5 distinct stages, being: harvesting, breaking, fermentation, drying, and storage. The stages in question are responsible for more than 45% of the organoleptic properties of cocoa, i.e. affect the final quality of the product. Fermentation is one of the most important stages since it is through fermentation that cocoa develops most of its characteristics, such as color, flavor, and aroma (FERREIRA, 2017). The step by step of cocoa fermentation is to let the mass ferment, without stirring, until the temperature reaches 32°C or if it does not reach the ideal temperature, wait to complete 48h. There are cases in which temperatures can be reached between 40°C to 60°C. (EFRAIM et al., 2010; SALES, CANDIDA, 2016).

Thus, the idea arose to create a cocoa fermenter model that could increase the efficiency of the fermentation cycle, and boost its scale and quality. Nowadays the process is done manually, requiring the worker to perform the laborious task of monitoring and stirring the cocoa mass at short intervals, in hours.

This work compares four fermentation equipment through the analysis of heat diffusion, Figure 1. The method is theoretical with the help of computer modeling, where the propagation of heat from a source throughout the system filled with a mass of cocoa is evaluated.

Reference

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Figures used in the abstract

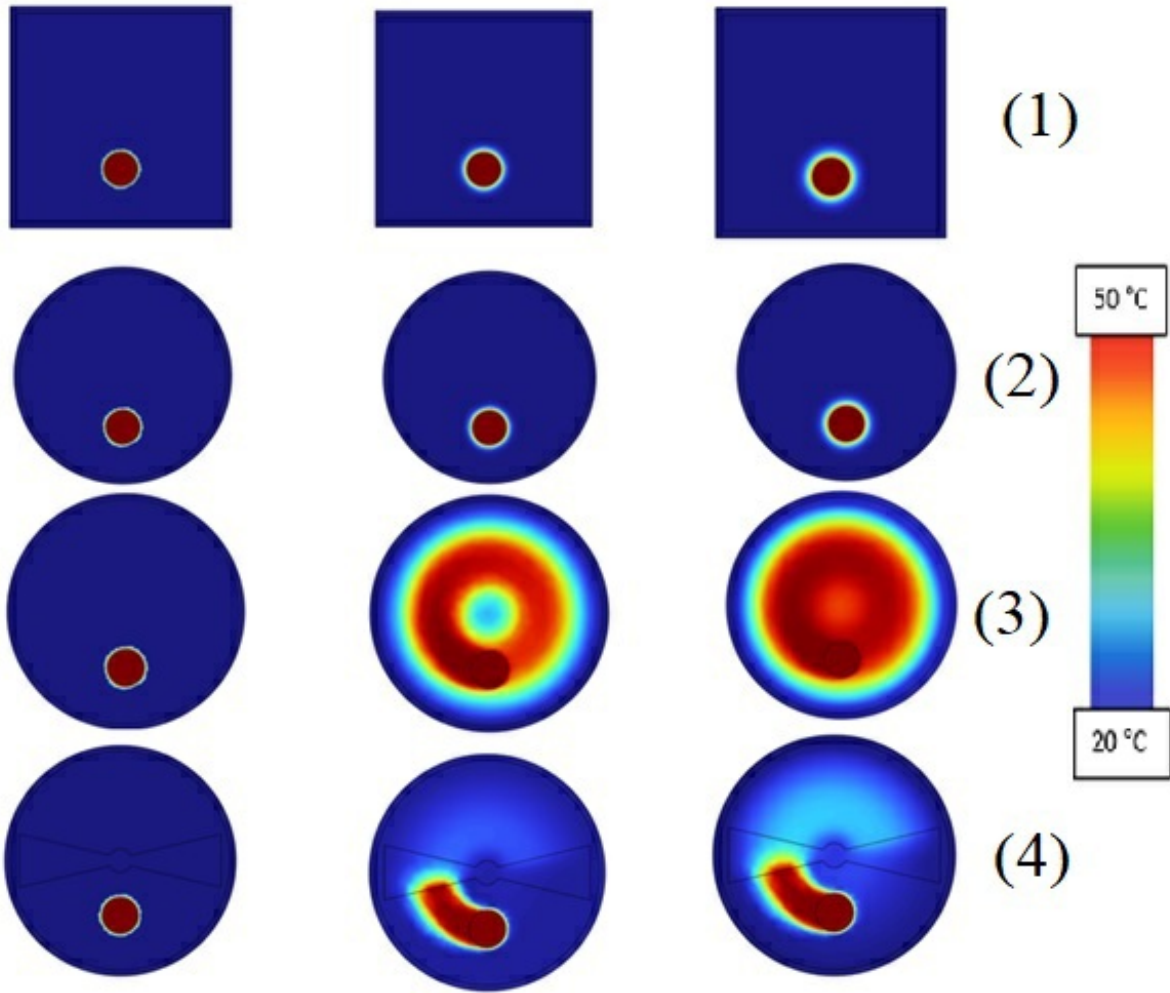


Figure 1 : Four fermenters: Trough 1, Static Cylindrical Fermenter 2, Rotational 3 and with Helices 4.